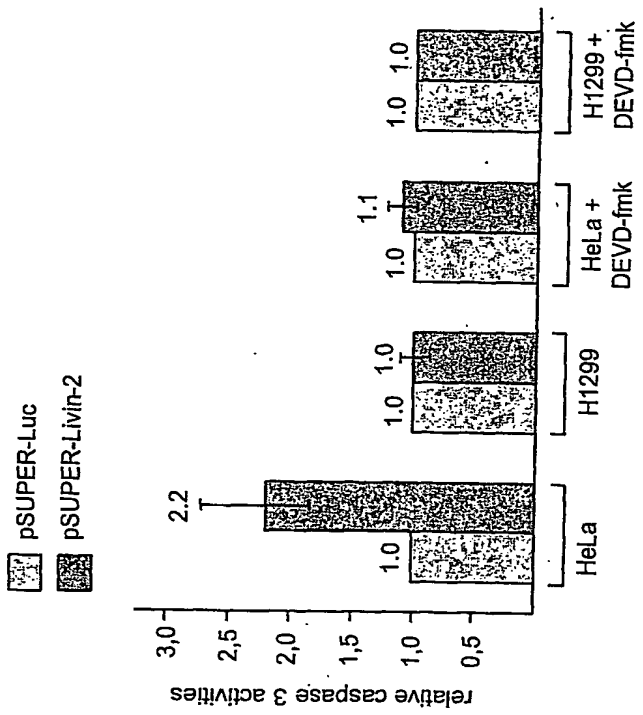
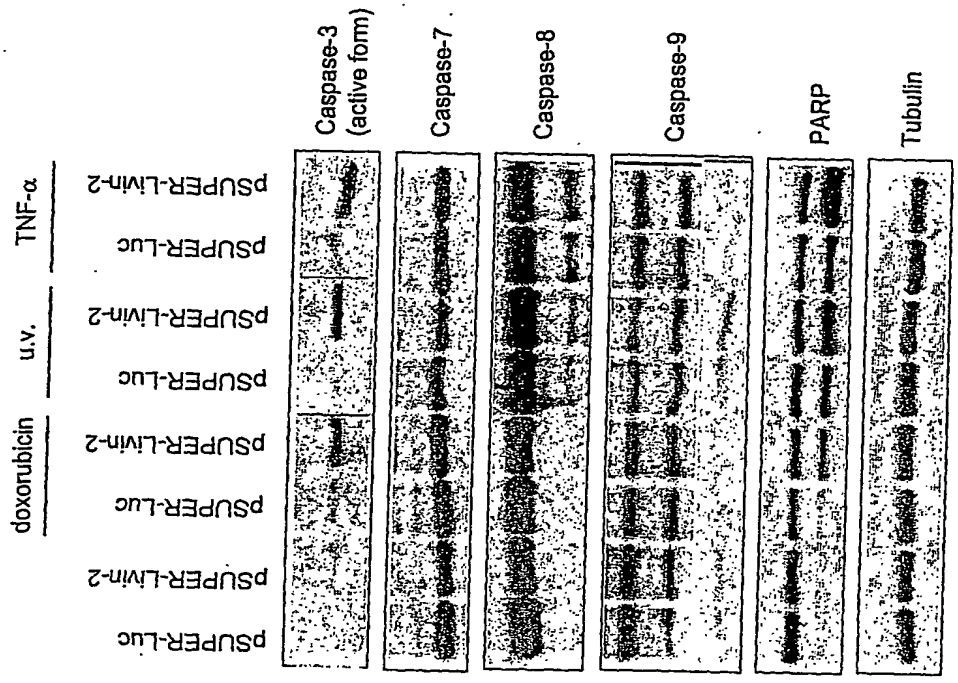
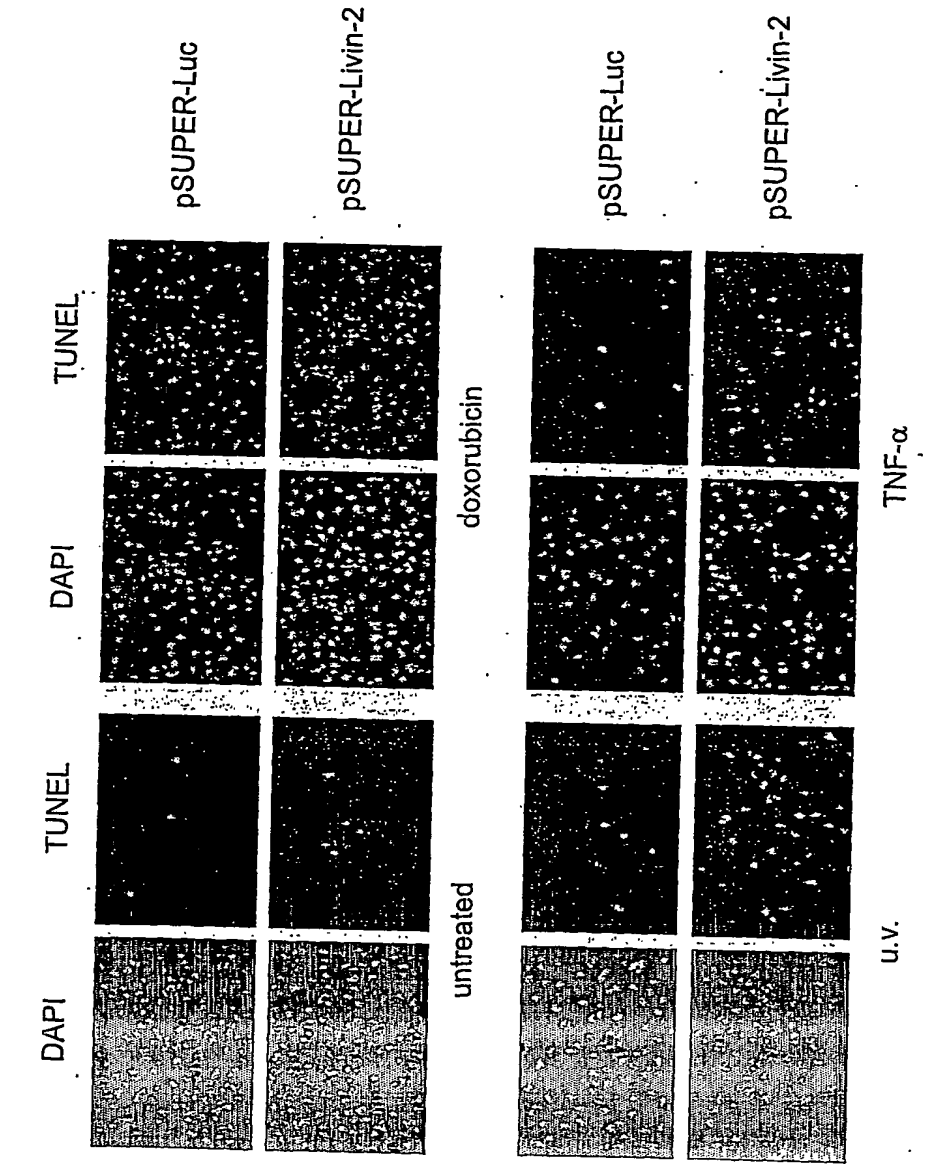
a
Livin-1:
5'-GUGGUUCCCCAGCUGUCAG
3'-UUCACCAAGGGGUCGACAGUC
U U C A A G A
Livin-2:
5'-GGAAGAGACUUUGUCCACA
3'-UUCCUUCUCUGAAACUGGUGU
U C A A G A
b
MeWo
H1299
HeLa
- Tubulin
- Livin
c
pSUPER-Luc
pSUPER-Livin-1
pSUPER-Livin-2
HeLa
- Tubulin
- Livin
d
pSUPER-Luc
pSUPER-Livin-1
pSUPER-Livin-2
HeLa
- Livin
- GAPDH


pSUPER-Luc
pSUPER-Livin-2
relative caspase 3 activities
3,0
2,5
2,0
1,5
1,0
0,5
1.0
2.2
1.0
1.0
1.0
1.1
1.0
1.0
1.0
HeLa
H1299
HeLa + DEVD-fmk
H1299 + DEVD-fmk


Caspase-3 (active form)
Caspase-7
Caspase-8
Caspase-9
PARP
Tubulin
doxorubicin
u.v.
TNF-α
pSUPER-Luc
pSUPER-Livin-2
pSUPER-Luc
pSUPER-Livin-2
pSUPER-Luc
pSUPER-Livin-2
pSUPER-Luc
pSUPER-Livin-2



a

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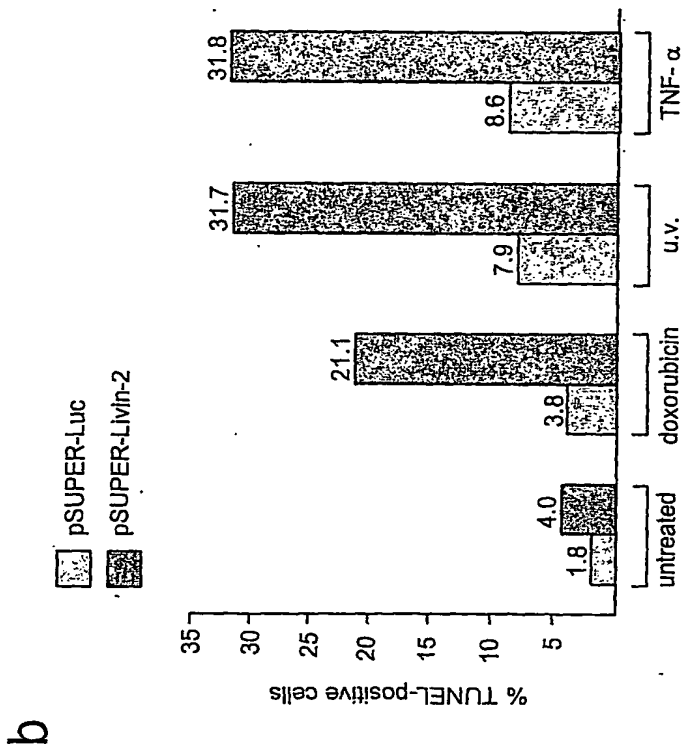
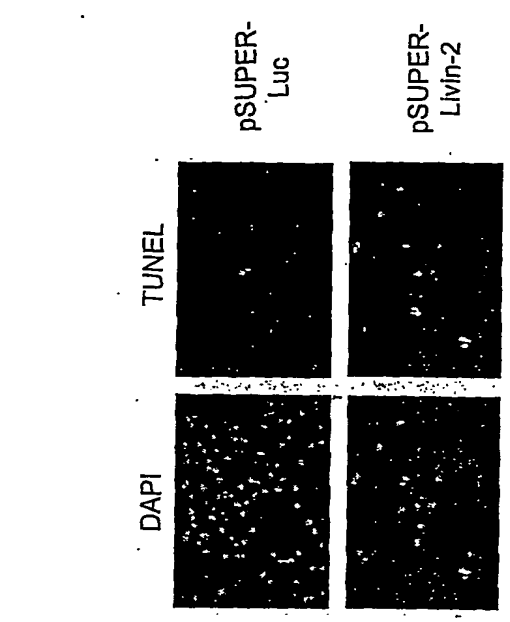
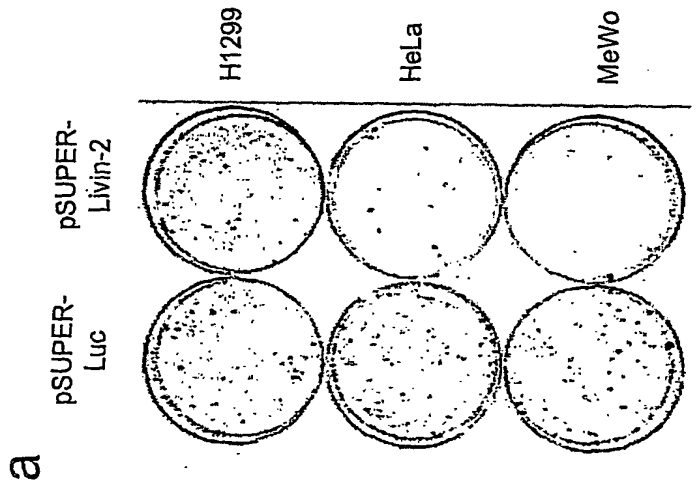

b
% TUNEL-positive cells
35
30
25
20
15
10
5
pSUPER-Luc
pSUPER-Livin-2
1.8
4.0
3.8
21.1
7.9
31.7
8.6
31.8
untreated
doxorubicin
u.v.
TNF- α





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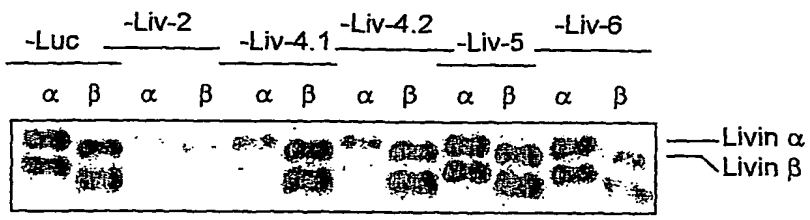
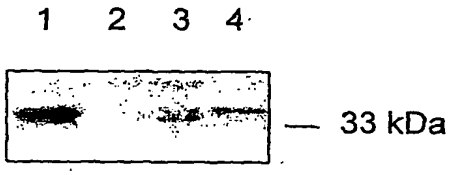
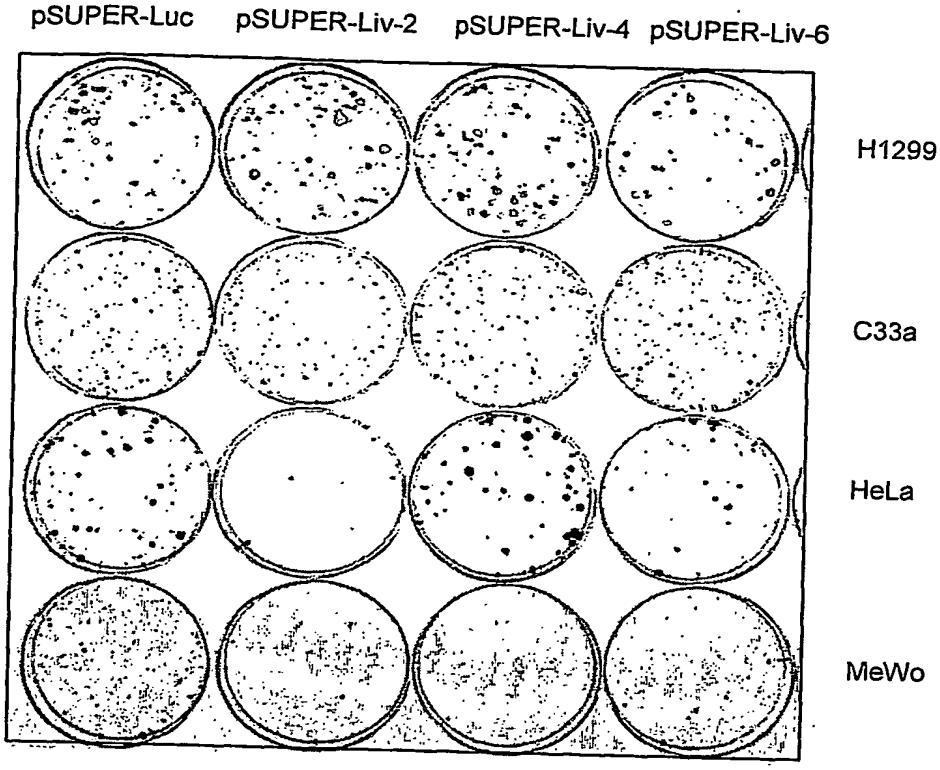
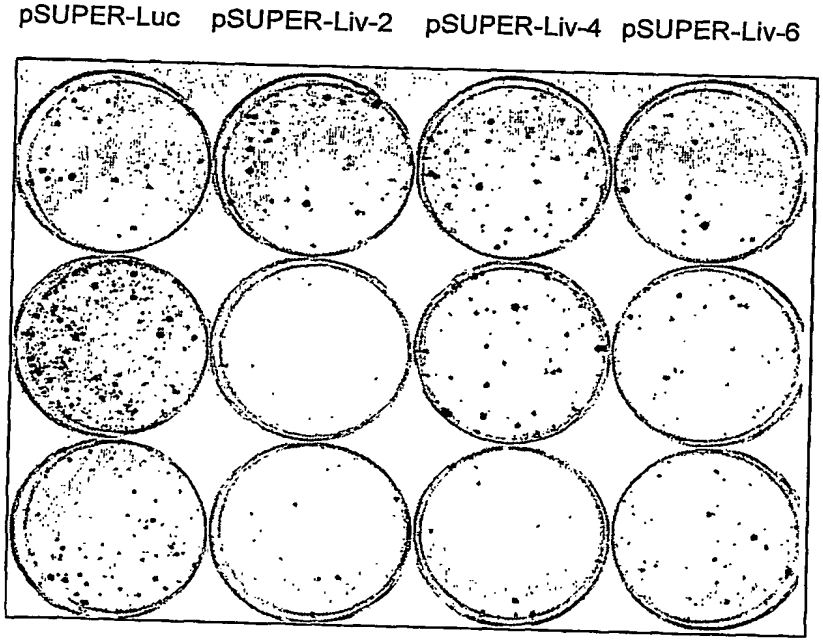


b



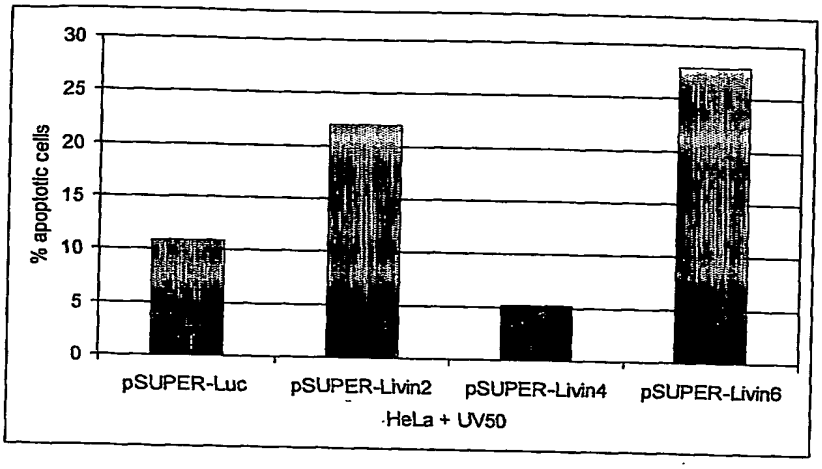
1. pSUPER-Luc
2. pSUPER-Livin-2
3. pSUPER-Livin-4
4. pSUPER-Livin-6


pSUPER-Luc
pSUPER-Liv-2
pSUPER-Liv-4
pSUPER-Liv-6
H1299
C33a
HeLa
MeWo

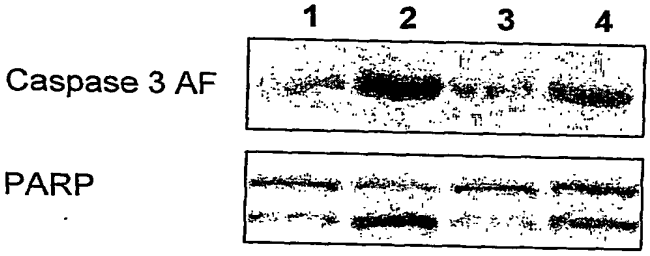

pSUPER-Luc
pSUPER-Liv-2
pSUPER-Liv-4
pSUPER-Liv-6
H1299
HeLa
MeWo

CFA 10

a

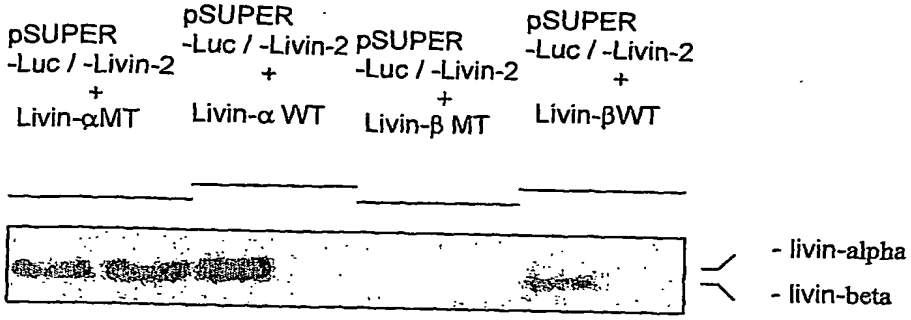


b

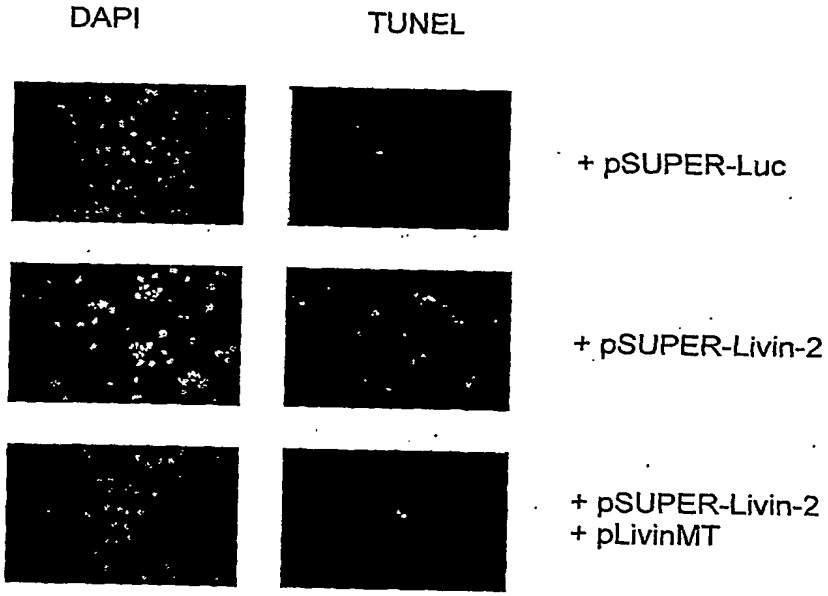


1. pSUPER-Luc
2. pSUPER-Livin-2
3. pSUPER-Livin-4
4. pSUPER-Livin-6

a


pSUPER -Luc / -Livin-2 + Livin-αMT
pSUPER -Luc / -Livin-2 + Livin-α WT
pSUPER -Luc / -Livin-2 + Livin-β MT
pSUPER -Luc / -Livin-2 + Livin-βWT
- livin-alpha
- livin-beta

b


DAPI
TUNEL
+ pSUPER-Luc
+ pSUPER-Livin-2
+ pSUPER-Livin-2 + pLivinMT